Product Data Sheet

Product Name: Congo Red
Cat. No.: GC13270

Chemical Properties

Cas. No.	573-58-0		
Chemical Name	sodium 3,3'-((1Z,1'Z)-[1,1'-biphenyl]-4,4'-diylbis(diazene-2,1-diyl))bis(4-aminonaphthalene-1-sulfonate)		
SMILES	[O-]S(=O)(C1=C(C=CC=C2)C2=C(C(/N=N\C3=CC=C(C=C3)C(C=C4)=CC=C4/N=N\C5=CC(S([O-])(=O)=O)=C(C=CC=C6)C6=C5N)=C1)N)=O.[Na+].[Na+]		
Formula	$C_{32}H_{22}N^6Na_2O_6S_2$	M.Wt	696.66
Solubility	DMSO : 20 mg/mL (28.71 mM; Need ultrasonic); H_2O : < 0.1 mg/mL (insoluble)	Storage	Store at 4°C, protect from light
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure	Congo Red		

Protocol

Cell experiment:

HeLa cells are selected for these studies due to their large cytoplasmic volume. Cells transfected with mutant or wild-type HSPB1 constructs are grown on coverslips for 24 hr and then are stained with Congo red to determine if the aggregates display amyloidogenic properties. Briefly, cells are first fixed with 10% formalin for 10 min and stained with 1% Congo red for 5 min, followed by destaining with 0.01% potassium hydroxide in 50% ethanol. Coverslips are then passed through graded ethanol concentrations for dehydration and mounted in a mounting medium and examined by fluorescent microscopy under rhodamine filter[1].

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References:

[1]. Amornvit J, et al. A novel p.T139M mutation in HSPB1 highlighting the phenotypic spectrum in a family. Brain Behav. 2017 Jul 21;7(8):e00774.

Background

Congo Red is an azo dye. Congo Red (CR) binding been used as a diagnostic test for the presence of amyloid in tissue sections.

Congo Red histochemical stain may serve as a simple screening tool for investigating if the aggregates in mutant cells have misfolded β-pleated sheet secondary structures. Congo Red histochemical dye has the ability to bind specifically to crossed β-pleated sheet structures. Wild-type HSPB1 should maintain protein homeostasis by binding proteins in non-native conformations, thereby preventing substrate aggregation. The T139M mutant, however, fails in this function and results in an accumulation of misfolded proteins, which are targeted by Congo Red for intercalating between the β-pleated sheet structures. Congo Red histochemical stain may serve as a simple tool to investigate if the aggregates in mutant cells have misfolded β-pleated sheet secondary structures[1].

References:
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